## **Table of Contents**

| Modelling the Energy Efficiency of Microcell Base Stations  Margot Deruyck, Emmeric Tanghe, Wout Joseph, and Luc Martens  | 1  |
|---|----|
| Energy-Aware Routing in the Cognitive Packet Network  Erol Gelenbe and Toktam Mahmoodi  | 7  |
| SmallCAN - A Reliable, Low-Power and Low-Cost Distributed Embedded System for Energy Efficient Building Automation  Harald Schrom, Tobias Michaels, Steffen Stein, and Rolf Ernst         | 13 |
| ASIA: An Access Control, Session Invocation and Authorization Architecture for Home Energy Appliances in Smart Energy Grid Environments  Rainer Falk, Steffen Fries, and Hans-Joachim Hof | 19 |
| Exploiting Demand Response in Web-based Energy-aware Smart Homes  Andreas Kamilaris and Andreas Pitsillides   | 27 |
| Upgrading a Medium Size Enterprise Power System with Wind and Solar Sources: Design, Financial and Environmental Perspectives  Thair Mahmoud, Daryoush Habibi, and Octavian Bass          | 33 |
| A Review of Energy Efficiency Initiatives in Post-Secondary Educational Institutes  David Motta Cabrera and Hamidreza Zareipour   | 40 |
| Using Multitasking and SSD Disks for Optimising Computing Cluster Energy-Efficiency Tapio Niemi, Jukka Kommeri, and Ari-Pekka Hameri  | 46 |
| Integrated Renewable Energy Infrastructure - Challenges And Opportunities  Mirek Piechowski and Anila Weerakkody  | 52 |
| Consumer Energy Management System: Contract Optimization using Forecasted Demand Chi-Cheng Chuang, Jimi Y. C. Wen, and Ray-I Chang  | 58 |
| Monitoring IT Power Consumption in a Research Center: Seven Facts  Antonio Vetro', Luca Ardito, Maurizio Morisio, and Giuseppe Procaccianti   | 64 |
| Optimal Scheduling of Smart Homes Energy Consumption with Microgrid Di Zhang, Lazaros G. Papageorgiou, Nouri J. Samsatli, and Nilay Shah  | 70 |
| Smard Grid Software Applications for Distribution Network Load Forecasting  Eugene Feinberg, Jun Fei, Janos Hajagos, and Richard Rossin   | 76 |

| Non-intrusive Appliance Monitoring Now: Effective Data, Generative Modelling and LETE Chi-Cheng Chuang, Today J. T. Sung, Gu Yuan Lin, Jimi Y. C. Wen, and Ray-I Chang   | 81  |
|--|-----|
| Energy Coupling Control of Telecommunication Network and Power Grid  Heiko Lehmann, Christoph Lange, and Andreas Gladisch  | 87  |
| An Overview of Smart Grids in Brazil: Opportunities, Needs and Pilot Initiatives  Cesare Quinteiro Pica, Daniella Vieira, and Gabriel Dettogni   | 93  |
| Smart Beijing: Correlation of Urban Electrical Energy Consumption with Urban Environmental Sensing for Optimizing Distribution Planning Yong Ding, Wenzhu Zhang, Takashi Miyaki, Till Riedel, Lin Zhang, and Michael Beigl | 98  |
| Synchronisation Challenges within Future Smart Grid Infrastructure  Jonathan Shannon, Hugh Melvin, Ronan O hOgartaigh, and Antonio Ruzzelli  | 102 |
| Synchronization Issues for Smart Grids Peter Corcoran and Hugh Melvin  | 108 |
| Developing Methods for the Detection of High Impedance Faults in Distribution  Grzegorz Swirszcz, Tomasz Nowicki, and Mark Yao   | 114 |
| Sensors and IEDs Required by Smart Distribution Applications  Francisc Zavoda  | 120 |
| BER Performance of Binary Transmitted Signal for Power Line Communication under Nakagami-like Background Noise  Youngsun Kim, Yong-Hwa Kim, Hui-Myoung Oh, and Sungsoo Choi  | 126 |
| A Systems Approach to the Smart Grid Saraansh Dave, Mahesh Sooriyabandara, and Mike Yearworth  | 130 |
| MAC Performance Evaluation in Low Voltage PLC Networks  Mehdi Korki, Hai Le Vu, Chuan Heng Foh, Xiao Lu, and Nasser Hosseinzadeh   | 135 |
| Degrees of Freedom in Information Sharing on a Greener and Smarter Grid  Kristian Helmholt and Gerben Broenink   | 141 |
| Frequency response from electric vehicales  Jianzhing Wu, Janaka Ekanayake, and Kamalanath Samarakoon  | 148 |
| Privacy vs. Pricing for Smart Grids  | 153 |

Stojan Z. Denic, Georgios Kalogridis, and Zhong Fan

| Optimal Control of Residential Energy Storage Under Price Fluctuations  Peter Van de Ven, Nidhi Hegde, Laurent Massoulie, and Theodoros Salonidis  | 159 |
|--|-----|
| Satisfiability of Elastic Demand in the Smart Grid  Jean-Yves Le Boudec and Dan-Cristian Tomozei   | 163 |
| Energy-aware Data Stream Management  Maik Thiele and Woflgang Lehner   | 169 |
| Ubiquitous Smart Grid Control Solution based on a Next Generation Network as Integration Platform Michael Massoth, Robin Acker, Nicolas Buchmann, Thorsten Fugmann, Christopher Knoell, and Maximilian Porzelt | 173 |
| Controlling a group of microCHPs: planning and realization  Maurice Bosman, Vincent Bakker, Albert Molderink, Johann Hurink, and Gerard Smit   | 179 |
| Stability Analysis for Multiple Voltage Source Converters Connected at a Bus  Arindam Ghosh, Ritwik Majumder, Gerard Ledwich, and Firuz Zare   | 185 |